
Section 3

Regional Conveyance System Condition

As stated in Subsection 1.3.1.1 of this memo, conveyance system needs based primarily on system condition identified here are based on information provided by Wastewater Treatment Division (WTD) Asset Management staff and staff from the West Point and South Treatment Plants.

Also noted in Subsection 1.3.1.1, Asset Management staff are leading a division-wide taskforce that is developing an asset management plan that will allow for business case evaluations of how best to maintain, repair, or replace regional wastewater conveyance and treatment facilities over time. The results of this program will allow least cost solutions to be implemented based on investment in capital versus ongoing maintenance on the County's conveyance system components and treatment plant facilities. The business case evaluation of all operation, maintenance and capital activities will be completed in 2010, and will likely result in an update to the portion of *Regional Conveyance System Plan* that addresses system condition at that time. Until this is completed, the following identified needs based on condition are based on information currently available and DO NOT represent the complete list of condition-driven needs for the entire system.

The Asset Management Group in WTD's Asset Management Section implements projects that replace or rehabilitate degraded regional conveyance system equipment or structures. They also implement projects that improve existing treatment processes at regional facilities. Asset management projects differ from major capital projects in that they do not typically provide significant capacity expansion or result in the construction of new facilities that provide added system capacity. Rather, they replace worn facilities, or extend their useful lives. Asset management projects still require capital investment in the conveyance system and as such, have the same financial and rate impacts as major capital projects that typically provide additional capacity. The Division's Asset Management Program has roughly 40 primary projects and programs in place that account for approximately \$50M annually in capital expenditures on the system. The Asset Management Section publishes an *Annual Facilities Plan* that details its operating budget, facility inspection programs, and lists its capital projects. The report is available for review from the Asset Management Section.

Asset Management capital projects are organized into seven categories. The first category, Stand-Alone Projects, consists of large asset management projects that are generally funded as individual fully defined projects with dedicated multi-year budgets.

An identified large stand-alone project is the repair or replacement of the Ballard siphon. The siphon is a wood stave inverted siphon constructed in 1935 that conveys combined sewage flows from north to south under Salmon Bay in the Ballard/Interbay area of the City of Seattle. Recent

internal inspections of the siphon using new sonar technology have identified structural issues that were not apparent during external inspections of the siphon over 10 years ago. These newly identified structural conditions warrant capital investment to repair or replace the siphon. Additional projects of this type are expected to be identified over time as the work of the Asset Management taskforce is completed over the next several years.

The remaining categories 2 through 7 are minor asset management projects that address needs resulting from the continuous inspection and monitoring of the wastewater conveyance and treatment system. The projects typically cost less than \$500,000 and take one to two construction seasons to complete.

The remaining categories are:

2. Electrical Systems and Instrumentation and Control Systems
3. Mechanical Equipment
4. Odor and Corrosion control
5. Pipeline replacements (these are typically in-plant replacements related to process equipment)
6. Process Replacements and Improvements (treatment plant related)
7. Structure and Site Improvements

An example of a minor asset management program in place to address ongoing identified condition issues is the Hydrogen Sulfide (H₂S) Corrosion Program. Hydrogen Sulfide is generated through a complex series biological and chemical reactions. These reactions known collectively as the sulfur cycle take place between the wastewater and the bacteria that thrive on the interior walls of sewer pipes. Detailed information about the sulfur cycle and how repair or rehabilitation needs are identified and addressed is contained in the Asset Management Section's *Annual Facilities Plan*.

Recent inspections of 57 known hydrogen sulfide (H₂S) corrosion sites in the conveyance system indicate that corrosion has been occurring at a rate faster than anticipated or seen in the past. The H₂S program has recently prioritized a list of the top 17 needs based on the latest assessment of the inspection data. Table 3-1 and Figure 3-1 below list and show the location of the recently updated high priority H₂S repair sites. Again, additional projects of this nature are expected to be identified over time as the work of the Asset Management taskforce is completed over the next several years.

Table 3-1. Identified High Priority Needs due to Hydrogen Sulfide Corrosion

Map Key	facility name	Need Type	Planning Basin
1	Beach Drive Interceptor	H ₂ S corrosion	Combined System
2	Bothell-Woodinville Interceptors	H ₂ S corrosion	North Lake Washington
3	Eastgate Interceptor	H ₂ S corrosion	South Lake Sammamish
4	EBI2	H ₂ S corrosion	Combined System
5	EBI4	H ₂ S corrosion	Combined System
6	EBI8	H ₂ S corrosion	Combined System

Map Key	facility name	Need Type	Planning Basin
7	ESI 1	H ₂ S corrosion	South Lake Washington
8	ESI 12	H ₂ S corrosion	NE Lake Washington
9	ESI 14	H ₂ S corrosion	NE Lake Washington
10	ESI 2	H ₂ S corrosion	South Lake Washington
11	Issaquah Interceptor - Section 1	H ₂ S corrosion	South Lake Sammamish
12	Juanita Interceptors	H ₂ S corrosion	NE Lake Washington
13	Kenmore Interceptor - Section 2	H ₂ S corrosion	North Lake Washington
14	Lake Hills Interceptor	H ₂ S corrosion	NE Lake Washington
15	North Interceptor	H ₂ S corrosion	Combined System
16	Redmond Interceptor	H ₂ S corrosion	NE Lake Washington
17	Sammamish Valley Interceptor	H ₂ S corrosion	North Lake Washington

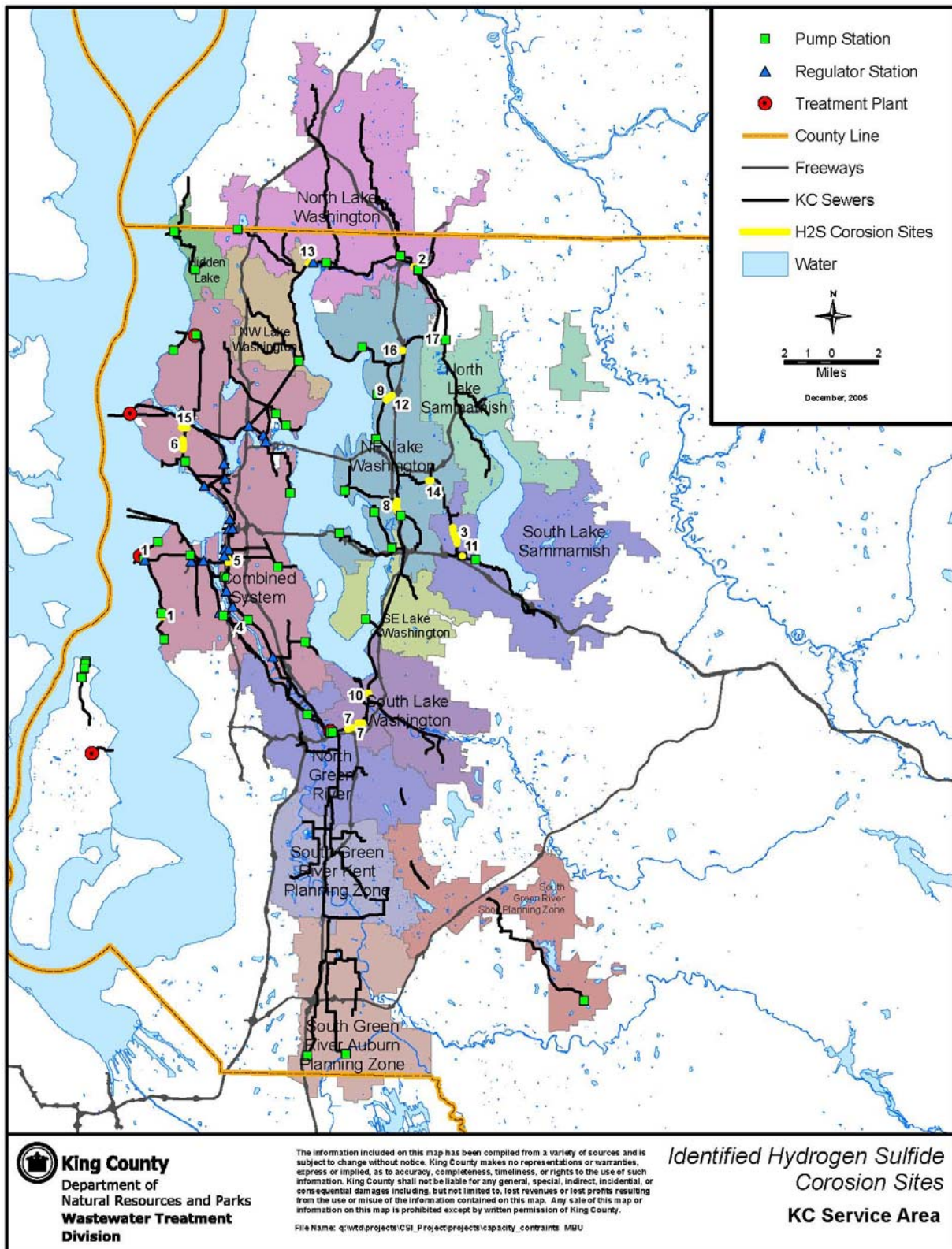


Figure 3-1. Identified High Priority Hydrogen Sulfide Corrosion Sites